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BEFORE THE ARIZONA CORPORATION COMMISSION

3 11 PM '98

JIM IRVIN

Commissioner - Chairman

RENZ D. JENNINGS

Commissioner

CARL J. KUNASEK

Commissioner

DOCCHENT CONTROL

IN THE MATTER OF THE COMPETITION IN THE PROVISION OF ELECTRIC SERVICES THROUGHOUT THE STATE OF ARIZONA

DOCKET NO. RE-00000C-94-0165 (formerly U-0000-94-165) NOTICE OF FILING OF REBUTTAL TESTIMONY OF DIRK C. MINSON AND WILLIAM EDWARDS

Notice is given that Arizona Electric Power Cooperative, Inc. has filed the rebuttal testimony of Dirk C. Minson and William Edwards.

RESPECTFULLY submitted this 4th day of February, 1998.

GALLAGHER & KENNEDY, P.A.

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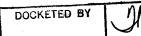
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Docket Control Division Arizona Corporation Commission 1200 West Washington Phoenix, Arizona 85007

Mana Corporation Commission DOCKETED

FEB 04 1998



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3	BEFORE THE ARIZONA CORPORATION COMMISSION
4	BEFORE THE ARTZONA CORPORATION COMMISSION
5	JIM IRVIN
6	Commissioner - Chairman RENZ D. JENNINGS
7	Commissioner CARL J. KUNASEK
8	Commissioner
9	IN THE MATTER OF THE COMPETITION) DOCKET NO. RE-00000F-94-0165
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11	STATE OF ARIZONA)
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14	REBUTTAL TESTIMONY OF
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	DIRK C. MINSON
16	ON BEHALF OF
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18	THE ARIZONA ELECTRIC POWER COOPERATIVE, INC.
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REBUTTAL TESTIMONY SUMMARY OF DIRK C. MINSON ON BEHALF OF

THE ARIZONA ELECTRIC POWER COOPERATIVE, INC. ("AEPCO") DOCKET NO. RE-00000F-94-0165

Mr. Minson explains the importance of stranded cost recovery for nonprofit, customer owned cooperatives like AEPCO and why the stockholder/ratepayer debate is irrelevant to cooperatives because 9 their customers are their owners.

Particularly in light of AEPCO's negative equity, Mr. Minson 11 also stresses the critical need to recover stranded costs and 12 probable impacts on AEPCO's role in both the regulated and 13 competitive market if recovery is not allowed. Rural areas of the 14 state are high service cost areas and financially viable cooperatives are essential to meet their current and future electricity needs.

Minson also discusses Rules' amendment, calculation methodology, filing timing and rate cap/price freeze matters in his rebuttal testimony.

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REBUTTAL TESTIMONY OF

DIRK C. MINSON

ON BEHALF OF

THE ARIZONA ELECTRIC POWER COOPERATIVE, INC. ("AEPCO") DOCKET NO. RE-00000F-94-0165

Are you the same Dirk C. Minson who filed testimony in this matter on January 9, 1998?

Yes, I am.

What is the purpose of this rebuttal testimony?

I will attempt to summarize, at a very high level, AEPCO's position on and reaction to some of the positions taken by other parties in this proceeding. Candidly, the sheer volume of testimony and divergence of opinion on various issues is overwhelming. For this reason, I will not attempt a point-by-point rebuttal of all positions. My silence on any subject should not be construed as any acquiescence by AEPCO on that position or on that issue.

SUMMARY

Please summarize AEPCO's general reaction to the testimony filed in this docket.

Understandably, much of the testimony focuses on the conflict which exists in an investor-owned utility environment between the stockholder and the customer. Because of this conflict, various parties to this proceeding are suggesting that this Commission not allow full recovery of stranded costs or require sharing of stranded costs between stockholders and customers. Without commenting on the fairness of such suggestions

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generally, this debate simply is irrelevant to non-profit, customer-owned cooperatives like AEPCO.

Please explain.

AEPCO was formed almost 40 years ago by its four original Arizona member distribution cooperatives to assist them in meeting their obligation to serve their owner-customers in their respective service territories. Both AEPCO and its member distribution cooperatives have as their primary goal the supply of reliable electricity to their owner customers at the lowest, reasonable cost with margins adequate to continue this mission and meet mortgage requirements. To the extent revenues exceed costs, these become customer equity and are returned to the customer over time. Non-profit cooperatives like AEPCO have, by definition, no profit motive. There is no distinction between stockholders and customers. To the extent that stranded costs are not allowed by this Commission or are only partially allowed, in AEPCO and its member distribution cooperatives case, this only harms their customers and weakens the ability of organizations which those customers have formed to continue to supply power in the future.

RECOVERY/NEGATIVE EQUITY ISSUES

Is AEPCO particularly vulnerable to disallowed stranded costs? By design, generation and transmission cooperatives like AEPCO have been highly leveraged organizations with little equity in their capital structures. This allows them to reduce costs, but provides little cushion to absorb losses. As both

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26 27 Mr. Hedberg and Mr. Edwards have pointed out, this is even more true in AEPCO's case because it actually has <u>negative</u> equity. Thus, an inability to recover stranded costs would seriously damage AEPCO and its member distribution cooperatives' ability to continue to supply electricity at the lowest, reasonable cost to many of the rural areas of this state.

What has AEPCO's experience been thus far as it relates to its negative equity position?

Historically, the negative equity has not prevented AEPCO from securing long-term funds for capital expansion or needed working capital. However, there have been numerous circumstances when AEPCO was required to go to extraordinary lengths to assure suppliers and creditors that AEPCO's balance sheet would not impair our ability to perform under a specified contract. More recently, AEPCO is addressing a contract inquiry relating to our negative equity position even though we have consistently performed over the last seven (7) years under the multimillion dollar purchase power contract which expires in 2000. Another recent example of the impact the negative equity is having and will have on the Cooperative pertains to the restructuring work now underway with the Rural Utilities Service ("RUS"). AEPCO has been specifically told by RUS that additional proof of financial capability will be required if AEPCO wants to change from our current conventional mortgage to a more flexible, less administratively burdensome indenture.

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First, let me briefly state that AEPCO has made substantial progress over the past several years in addressing its cost structure and its negative equity position. These efforts have resulted in reducing our negative equity position from \$50 million to an anticipated \$22 million at the end of 1997. However, if the Commission issues a Rule or order that prevents the recovery of stranded cost, the Cooperative will be required to record significant write-downs. This would reverse the progress made thus far and significantly increase our negative equity position. As the negative equity balance increases, coupled with an increased risk profile associated with a competitive market, at a minimum the cost of long-term funds will also increase. This, in turn, will obviously increase the cost of service resulting in an upward cost spiral and will harm the Cooperative's ability to serve and compete. also remind the Commission that under its Rules for the foreseeable future the obligation to serve does not cease. Therefore, it is critical that stranded costs be allowed to assure viable nonprofit, customer-owned organizations which can continue to meet the needs of serving many of the highest cost areas of this state at the lowest, reasonable cost.

RULES AMENDMENTS ISSUES

In Attachment 1 to Dr. Rose's testimony on behalf of Staff, Staff now suggests that R14-2-1607 be modified to change

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mandatory recovery of unmitigated stranded costs to permissive recovery. Does AEPCO agree?

Staff's sudden and inexplicable reversal of Absolutely not. position both as to the Rules it recommended the Commission adopt as well as positions it articulated in the Working Group's Final Report will complicate, not accelerate, this Commission's stated goal of moving toward competition in the electric industry. Also, if the Commission were to modify its Rules as suggested by Staff, the accounting and financial consequences could be significant. Although I am not an accountant, I work with AEPCO's auditors on its financial statements. I can confidently predict that a statement by this Commission such as the one recommended by Staff that unmitigated stranded costs can be disallowed will have serious and immediate FASB 71 and FASB 121 implications.

Mr. Higgins has criticized your suggestion that Section 1607.J of the Rules be deleted. Please respond.

In my direct testimony (pages 9-10) I recommended Rules' amendments which, among other things, would expedite and make more manageable stranded costs proceedings. For example, I recommended that the prudence of prior investments already decided not be relitigated in stranded costs proceedings and also suggested that stranded costs should be recovered from all customers. I do not necessarily disagree with Mr. Higgins' statement that demand reductions attributable to self-generation options have been available to customers for many

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years. Pragmatically, however, sorting out these matters in the context of a stranded costs proceeding will lead to endless debates over whether the self-generation option really exists, whether the option could be exercised in the future and whether load loss is attributable to competition or these or other factors. If this Commission wishes to proceed expeditiously to a competitive market, I would suggest that such debates be held to an absolute minimum. That is one of the primary reasons for the Rules' amendments AEPCO has suggested.

CALCULATION METHODOLOGY

Several parties have suggested different approaches for calculation of stranded costs. Please summarize AEPCO's reaction to these suggestions.

In its case, AEPCO believes the "revenues lost" methodology is most appropriate to determine and calculate stranded costs because, coupled with a true-up mechanism, it will accurately measure AEPCO's stranded costs and insure that its customer owners do not pay more or less than is necessary to meet AEPCO's costs and its mortgage coverage requirements. Both Mr. Hedberg and Mr. Edwards have provided additional detail on this subject on AEPCO's behalf.

Mr. Propper of RMI suggests that AEPCO plans to divest itself of generation and transmission assets. Is this accurate?

No. For approximately a year, AEPCO and its member distribution cooperatives have been studying a reorganization plan which may accomplish a number of objectives including, but not

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limited to, better positioning of AEPCO and its member distribution cooperatives for a competitive market and allowing member distribution cooperatives who wish to have more options greater flexibility as to an all requirements or partial requirements relationship in the future. This restructuring does not involve the divestiture to a third party of any AEPCO generation or transmission assets.

TIMING OF STRANDED COST FILING

Some parties have argued for very early filings of stranded cost estimates. Please respond.

AEPCO has no intention of delaying unnecessarily the filing of any estimate of its stranded costs. However, AEPCO also wants to be as precise as possible in this stranded costs filing and realistically it cannot do that until the Rules are clarified. Therefore, suggestions that the filing be made as early as April or May of this year are simply unrealistic. Assuming the revenues lost methodology may be employed, AEPCO believes it can prepare and file with the Commission an estimate of stranded costs within 90 days following clarification of the Commission's Rules.

RATE CAPS/PRICE FREEZES

Some parties have suggested that this Commission should impose rate caps or price freezes. Does AEPCO agree?

No. The terms "rate cap" and "price freeze" are being used rather loosely. I am not certain that I fully understand what any party means when it uses either term. However, to the

extent these parties invite the Commission to impose currently a cap or freeze on rate levels without reference to the cost of providing service and other financial requirements, I doubt that concept is lawful. As importantly, to the extent such a cap or freeze is intended to immunize consumers from the consequences of the market, this would be bad policy. competition and market based rates entails risks and rewards. Arbitrary regulatory interference to shield customers from the consequences of choice is irrational and does not allow the market to work as it should. Finally, like most price or cost control schemes, in my opinion rate caps or price freezes would be administratively difficult if not impossible to police and undoubtedly would create unintended consequences and gaming possibilities.

Does this conclude your rebuttal testimony?

Yes, it does.

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BEFORE THE ARIZONA CORPORATION COMMISSION

JIM IRVIN

Commissioner - Chairman

RENZ D. JENNINGS

Commissioner

CARL J. KUNASEK

Commissioner

IN THE MATTER OF THE COMPETITION) Docket No. RE-00000F-94-0165 IN THE PROVISION OF ELECTRIC SERVICES THROUGHOUT THE STATE

OF ARIZONA

Rebuttal Testimony of William K. Edwards On Behalf Of Arizona Electric Power Cooperative, Inc.

February 4, 1998

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TESTIMONY

OF

WILLIAM K. EDWARDS

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SUMMARY OF THE

TESTIMONY

OF

WILLIAM K. EDWARDS

Mr. Edwards testifies that given the non-profit cooperative status of AEPCO, whereby AEPCO is owned by the customers it serves, this makes irrelevant issues of sharing stranded costs between stockholders and customers since AEPCO is owned by its customers.

Mr. Edwards responds to Dr. Rose, the staff witness, on several points. The Commission should not re-evaluate assets already in rate base for the appropriateness for inclusion in the stranded costs recovery process. In AEPCO's case, the obligation to serve is matched by the obligation to buy as enumerated in AEPCO's all requirements agreement with each of its customer owners. Mr. Edwards affirms the need to collect stranded costs. Mr. Edwards also testifies that AEPCO's existing capitalization precludes the equity holder (customer owner) from absorbing stranded costs. Mr. Edwards testifies as to what may happen if the AEPCO cannot recover its stranded costs.

Mr. Edwards affirms the lost revenues approach as the best method for determining stranded costs and suggests that a periodic true-up mechanism would be advisable.

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4		Rebuttal Testimony of
5		William K. Edwards
6		Before the
7		Arizona Corporation Commission
8		Docket No. U-0000-94-165
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13	Q.	Please state your name, and business address?
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15	A.	My name is William K. Edwards, my business address is 2201
16		Cooperative Way, Herndon, Virginia 20171.
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19	Q.	With whom are you employed and what are your responsibilities?
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21	Α.	I am employed by with the National Rural Utilities Cooperative
22		Finance Corporation (CFC) as an economist and senior consultant.
23		In that capacity I assist cooperatives on regulatory issues before
24		the FERC and many state commissions.
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27	Q.	What is your educational background and experience?
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29	Α.	I received my BS degree in Business with a concentration in
30		economics from Christopher Newport College of the College of
31		William & Mary in 1977, and a MA degree in economics from Old
32		Dominion University in 1979. My major field of study included,
33		mathematical economics, econometrics, and microeconomics. I have
34		completed a number of courses toward a Ph.D. in economics from
35		Virginia Polytechnic Institute & State University. I have worked
36		for the firm of Ernst & Ernst as a consultant principally in the
37		electric utility industry. From 1982 to 1985, I was employed by

Mississippi Power & Light Company (Entergy - Mississippi) as an

economist responsible for rate research. From January 1986 until
early 1995 I was employed by Central Louisiana Electric Company,
Inc. as Manager of Rate Research and subsequently as Director of
Rates. In that capacity I was responsible for regulatory affairs,
regulatory accounting, rate design, cost of services studies, rate
administration, and the attendant litigation associated regulatory
issues before both the Louisiana Public Service Commission, and the
Federal Energy Regulatory Commission. A more comprehensive history

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Q. Mr. Hedberg of CFC had filed direct testimony on AEPCO's behalf in this docket. What is his status?

of my experience is contained as Exhibit (WKE-1) Schedule 1.

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15 A. Unfortunately, Mr. Hedberg is presently suffering from pneumonia 16 and is unable to participate in this proceeding. I will adopt Mr. 17 Hedberg's direct testimony as my own.

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20 Q. What is the purpose of your testimony?

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22 A. The purpose of my testimony is to respond to certain issues raised 23 by various parties in this proceeding. The volume of testimony 24 and divergence of opinion is large, so I will not attempt to 25 respond to all points raised.

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27 Q. Is much of this testimony relevant, in your opinion, to AEPCO?

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35 36 A. No. Many of the parties (large industrial customers, the Attorney General's Office and RUCO, among others) focus on various sharing ratios between stockholders and customers. Without commenting generally on the appropriateness or fairness of these suggestions, they simply have no application to AEPCO. AEPCO is a non-profit electric generation and transmission cooperative. AEPCO's equity is owned by the distribution cooperatives it serves. Therefore, the divergence of interests between equity holders and customers is

simply not present in AEPCO's case. AEPCO's customers and equity holders are the same.

Q. Is the obligation to serve a justification for the collection of stranded costs resulting from bad investment decisions?

A. No. Dr. Rose is correct when he suggests that the obligation to serve is not sufficient to support stranded costs of assets that the Commission would not consider to be prudent or used and useful. However, assets already allowed in rate base should not be reviewed again for their prudence as a part of a stranded costs determination. Such a redundant review increases costs, needlessly complicates proceedings, and subjects the owners, creditors, and equity holders of those assets (which in AEPCO's case is its customers) to unnecessary risks.

I also do not agree with Dr. Rose's statement that there has never been an obligation to buy on the part of customers of the utility. In fact there was both an obligation to provide service on the part of the utility, as well as an obligation to buy on the part of the customer that was implicit in the monopoly franchise of the utility as granted by the state. Customers were not given a choice of generation suppliers, but their present and future needs had to be anticipated and met by the utility. AEPCO has an all requirements contract with each of its member distribution cooperatives that formalizes this obligation to buy and in turn supports the obligation to supply electricity which its distribution cooperative owners have to their customer owners.

Q. Should stranded costs be recognized by this Commission?

A. Yes. This Commission should provide an opportunity for generation owners to collect all of their prudently incurred stranded costs. Failure to provide an opportunity to collect stranded costs will adversely affect generation owners. In AEPCO's case, the impact could be particularly adverse because of AEPCO equity situation.

An inability to collect stranded costs may lead to higher rates
and therefore would not be in the public interest.

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Q. What is the relationship of the National Rural Utilities

Cooperative Financing Corporation ("CFC") to AEPCO and the other

Arizona cooperatives as well as cooperatives across the country?

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A. CFC is a non-governmental financing organization which provides capital for the electric cooperative utilities across the county.

CFC is cooperatively owned by the members it serves. CFC is a creditor for AEPCO as well as a creditor to most of the Arizona cooperatives.

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CFC sells bonds, as well as other securities, of various terms and lends the proceeds to cooperatives seeking capital. The ability to collect the outstanding principal is contingent upon the revenue stream created by the rates charged to their owner/customers. CFC accepts certain risks associated with loans which are not unlike the risks cooperatives accept in providing service to their customers. These risks include, among other things, the risk of interest rate swings, defaults, and by virtue of our close association with our electric utility member owners, the risks associated with utility operations and regulation. Risks are inherent in the electric utility business as well as CFC's core business. Although we seek to mitigate these risks as a normal course of business, cooperatives as well as CFC face these risks on a daily basis. Today, these risks include the risks associated with making the transition from one regulatory method to another. However, should electric cooperatives be forced to make that transition more rapidly than can be reasonably accommodated, or if present generation owners like AEPCO are denied the ability to collect stranded costs, they may suffer irreparable economic harm by not being able to repay creditors money borrowed under various mortgage indentures. These issues

threaten cooperatives, their creditors, and their owner/customers with a transition process which, if it is too short or if it fails to provide a means to pay for the assets used for many years to provide reliable service, may result in serious financial stress that would likely increase the cost of providing customers with power and energy. This may, at a minimum, result in an inability to access capital markets, or may only allow access to capital markets at above market rates.

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Q. Dr. Rose suggests in his testimony (page 8 lines 4-28) that in a competitive environment companies sometimes do not receive their full investment in assets over time? Do you concur with his analysis?

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A. What Dr. Rose suggests is sometimes true. However, comparisons 16 between competitive markets and regulated markets are irrelevant in 17 this case. The Commission should focus on the best way to 18 transition to a competitive market without economically injuring 19 20 generation owners in the process. If the transition is 21 successful, the competitive market will provide the incentive to be 22 efficient. Generation utilities in Arizona have not been in the competitive market historically. In a regulated industry there is 23 24 an opportunity to earn a return on the money invested in prudently 25 constructed assets or in AEPCO's case an opportunity to collect its 26 costs and meet its mortgage requirements. If the Commission fails 27 to provide an adequate transition to a competitive generation 28 market, equity holders (AEPCO's customer owners) and creditors 29 potentially could be injured. The electric generation industry is 30 an extremely capital intensive industries. Debt capital used to construct these long-lived assets is borrowed from investors 31 32 pursuant to long-term debt instruments that require companies to 33 maintain certain coverage ratios while the debt is amortized. 34 These requirements exist as a means of protecting creditor's 35 capital. Likewise, mortgage requirements provide specific liens on 36 the assets in the event of default or bankruptcy. Dr. Rose's

inference generation companies can transition to a competitive environment with something less than full recovery of stranded costs is both <u>unrealistic</u> and <u>unwise</u>.

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Q. What would happen to AEPCO if creditors were made whole, but equity holders were not?

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8 A. AEPCO's equity holders have no ability to absorb costs. AEPCO's 9 equity holders are the distribution cooperatives served by AEPCO. 10 Presently AEPCO has negative equity on its balance sheet. Highly 11 leveraged capital structures like AEPCO carry special risks that 12 limit its ability to absorb stranded costs. This is why 13 suggestions that stranded costs be shared between customers and 14 equity holders is irrelevant in AEPCO's case. AEPCO is a non-15 profit generation and transmission cooperative that is owned by the customers it serves. AEPCO has no equity to share. Its owner and customers are one in the same. Hence, there is no conflict between 17 the customers and the equity holders. AEPCO seeks to recover only 18 19 its cost of providing service plus a small margin to meet its

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coverage ratios.

Q. What may happen to AEPCO if adequate allowances for stranded costs recovery are not allowed by this Commission?

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A. Even if AEPCO's exposure to stranded costs is minor, the result may
be that AEPCO would not have access to capital markets at
competitive rates. If AEPCO's exposure to these costs is greater,
AEPCO may have far more serious financial problems.

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Q. Do you concur that AEPCO should be afforded the opportunity to recover stranded costs only to the extent necessary to "maintain financial stability" (Dr. Rose page 16 lines 26-27)?

1 A. To a certain extent, yes. Without debating the precise reasons as 2 to how Dr. Rose arrived at this conclusion, in the case of a nonprofit customer-owned cooperative like AEPCO, adequate "transition" 3 revenues to cover costs and meet mortgage requirements are all it seeks or needs. 5 6 8 Q. Do you agree with Dr. Rose's conclusion that the "top down" or "lost revenues" approach to stranded costs should be employed in 9 Arizona? 10 11 The lost revenues approach should be used. 12 A. Yes. 13 I do not believe that forced divestiture is a viable means to 14 15 determine an assets value for the purpose of stranded cost determination in this case. There are serious flaws to that 16 logic. Among them are the fact that forcing a generation owner to 17 18 sell its assets may be confiscatory. Generation assets are still needed to meet AEPCO's continuing obligation to serve 19 20 responsibilities. Also, in the case of AEPCO, mortgage indentures 21 and loan covenants may adversely affect the market value and would 22 produce unacceptable costs and delays to unwind the debt. 23 24 The "bottom down" approach described by Dr. Rose and suggested by 25 several other parties would require an appraisal (assuming the 26 assets are not sold to affix the value). Such appraisals are 27 subjective by definition and may not reflect the economic value of 28 the assets. 29 30 What methodology should be applied to collect stranded costs? 31 0. 32

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particularly well suited for AEPCO since it seeks only to cover

The lost revenues method should be the methodology used to

determine stranded costs. The lost revenues approach is

its costs and its mortgage coverage requirements.

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Q. Should the Commission adopt a true-up for the lost revenues approach?

A. I would recommend that the stranded cost mechanism include a true-up procedure. Absent a true-up procedure, the revenues lost approach necessarily requires forecasts of market prices, sales and anticipated revenues for the future. It may also require assumptions regarding the discount rate used to calculate the present value of the stranded costs. Such forecasts are prone to error that is avoidable by use of a true-up mechanism. As a non-profit cooperative, AEPCO seek only to recover those stranded costs necessary to meet its cost of service and mortgage coverage requirements. The lost revenues approach in conjunction with a periodic true-up mechanism meets these goals.

19 Q. Does this conclude your rebuttal testimony?

21 A. Yes.

WILLIAM K. EDWARDS

Mr. Edwards is a Senior Consultant at the National Rural Utilities Cooperative Finance Corporation. Mr. Edwards' primary focus is the public utility industry. His areas of expertise include regulation, load forecasting, planning, cost and rate design, and mergers and acquisitions. Mr. Edwards has previously worked for the firm of Ernst & Whinney as a consultant, Mississippi Power & Light Company an operating company of Entergy as a supervisor in the Rate Department, Central Louisiana Electric Company as Director of Rates & Regulation, and Air Liquide America Corporation as an Energy Manager.

PROFESSIONAL EXPERIENCE

Mr. Edwards has extensive experience in the above listed areas. Representative projects are listed below for each of these areas.

Regulation. Mr. Edwards has broad and extensive experience in regulatory matters both as a consultant and as a utility executive. As Director of Rates for Central Louisiana Electric Company, Mr. Edwards had the responsibility for planning and successful execution of a number of dockets before both the Louisiana Commission and the FERC. Such experience includes, but is not limited to the following projects.

- Indiana Power & Light Rate Design Efforts Before the Indiana Commission
- ISES 1 & 2 rate proceedings before the Mississippi Public Service Commission
- Grand Gulf Rate proceeding before the Mississippi Public Service Commission
- Dolet Hills rate proceeding before the Louisiana Public Service Commission
- Wholesale rate proceeding before the FERC on behalf of Mississippi Power & Light Company
- Wholesale rate proceeding before the FERC on behalf of Central Louisiana Electric Company
- Transmission rate proceeding before the FERC on behalf of Central Louisiana Electric Company
- Antitrust case before the FERC on behalf of Central Louisiana Electric Company.

<u>Load Forecasting.</u> Mr. Edwards has been involved in many load forecasting efforts with the utility industry and has participated in the industry debates regarding the evolution of methodologies for forecasting. Some of the companies Mr. Edwards has been involved with include the following.

- Wisconsin Public Service Commission A review of the forecasting methodologies of the Wisconsin Utilities
- Delmarva Power & Light Advance Plan Proceedings before the Delaware Commission
- Entergy Forecasting Committee
- Central Louisiana Electric Company Development of an econometric load forecast 1985-1995
- Aluminum Association of America electric end-use and econometric approaches to load forecasting.

<u>Planning.</u> Mr. Edwards has extensive knowledge and experience with production costing models (e.g. PROMOD and POWRSYM) and load flow models (PTI and Westinghouse).

- Entergy determination of fuel savings attributable to load and unit changes
- Central Louisiana Electric Company:
 - Fuel Budgets,
 - Analysis of Savings from Joint Dispatching,
 - Generation Planning
 - Rate Studies, and
 - Loss Studies.

<u>Cost & Rate Design.</u> Mr. Edwards has had extensive experience with cost analysis/determination and rate design for a number of companies including:

- Northern Indiana Public Service Company
- Delmarva Power & Light
- Arkansas Power & Light
- Mississippi Power & Light
- Louisiana Power & Light
- New Orleans Public Service Company
- Missouri Public Service Company
- Iowa Public Service Company
- Wisconsin Public Service Company
- Empire District Power Company
- New York State Gas & Electric Company
- Iowa Power & Light Company
- Allegheny Power System
- Central Louisiana Electric Company
- Air Liquide America Corporation

Mergers & Acquisitions. Mr. Edwards has performed a number of merger & acquisitions studies for various clients including several of the more recent projects are presently in progress and cannot be disclosed herein:

- Central Louisiana Electric Company
- MidWest Energy

TESTIMONY

Mr. Edwards has testified before the following Commissions on a broad range of topics:

Company	<u>Jurisdiction</u>	<u>Subject</u>
NIPSCO	Indiana	Long-Run Marginal Cost
IP&L	Indiana	Long-Run Marginal Cost
MP&L	Mississippi	Econometric Forecasts
MP&L	FERC	Financial Model/Rate of Return
CLECO	Louisiana	Rate Design/Revenue Recovery
CLECO	Louisiana	FASB 106 Issues
CLECO	Louisiana	Securities Issuances
CLECO	Louisiana	Securities Issuances
CLECO	Louisiana	Securities Issuances
CLECO	FERC	Cost of Service/Rate of Return
CLECO	FERC	Cost of Service/Rate of Return
CLECO	FERC	Cost of Service
CLECO	FERC	Antitrust Issues
CLECO	FERC	Antitrust Issues
Air Liquide	Washington	Restructuring
Air Liquide	Texas	Restructuring
Air Liquide	Arizona	Rates/Corporate Structure
Air Liquide	Louisiana	Short-Run Marginal Costs and
- .		Non-Firm Rates
Idaho Co-ops	Idaho	Restructuring
Central Elect Co-op	Montana	Antitrust

EDUCATION

Mr. Edwards holds a B.S. degree in Economics from Christopher Newport College of the College of William & Mary (with distinction) and a M.A. degree from Old Dominion University in Economics. Mr. Edwards' fields of concentration include econometrics, mathematical economics, and microeconomics. Mr. Edwards has completed the majority of requirements for the Ph.D. degree in economics at Virginia Polytechnic Institute & State University.

PUBLICATIONS AND PRESENTATIONS

Mr. Edwards has published or has spoken at the following industry conferences:

- "Role of Antitrust Laws in the Restructuring Process", <u>Kentucky Association of Electric Cooperatives</u>, September 1997.
- "FERC Regulation of Cooperatives", <u>National Rural Utilities Cooperative Finance</u> <u>Corporation Seminars in Denver, Washington, and Atlanta February/March 1997.</u>
- "The Essentials of FERC Regulation of Cooperatives", In conjunction with N. Beth Emery, Esq. And Daniel E. Frank, Esq. On behalf of the <u>National Rural Utilities</u> Cooperative Finance Corporation, February 1997.
- "Unresolved FERC Rate Making Issues", <u>National Rural Utilities Cooperative</u> Finance Corporation Independent Borrowers Conference, July 2, 1997.
- "Major Issues Facing the Electric Utility Industry As A Result of Restructuring", Texas Cooperative Accounting Association, June 1997.
- "FERC's New Merger Policy", <u>National Rural Utilities Cooperative Finance</u> <u>Corporation</u>, March 1997.

- Acquisitions and the Future of Electric Distribution Cooperatives", Presentation Before the <u>Indiana Statewide Association of Electric Cooperatives</u>, August, 1996.
- The Economics of Acquisitions, Presentation Before the <u>National Rural Electric</u> <u>Cooperative Association</u>, June 1996.
- "Comments Regarding Electric Industry Restructuring", on behalf of <u>Air Liquide</u>
 <u>America Corporation</u> for the FERC 1995.
- "Non-Firm Industrial Rates: Economic Justification Vs Marketing Justification", Presentation Before the Southeastern Electric Exchange, April 1992.
- "Econometric Elasticity Measures Using Directly Estimated Differential Equations", Presentation Before the Southeastern Electric Exchange, October 1989.
- "Role of Marginal Costs in the Rate Making Process", Entergy Rate Conference, June 1984
- "An Inverse Limit Theorem to the Core of the Economy", <u>Old Dominion University</u> Thesis for the Degree of Master of Arts in Economics, Summer 1979.

PROFESSIONAL AFFILIATIONS

Mr. Edwards is a member of the American Economic Association (AEA), the American Law and Economics Society, and the American Statistical Association. In 1993, Mr. Edwards served as chairman of the Southeastern Electric Exchange's Rate Section. Mr. Edwards has additionally been a member of the Edision Electric Institute's Rate Committee.